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Goddard Space Flight Center

Inside Wallops

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Rocket, Please "Phone Home"

Imagine a day when self-diagnostic tools allow future rockets to phone home with vital information about their condition, location and performance. NASA engineers hope that day comes sooner than later and believe the technology could replace expensive ground systems, reducing the cost of space flight.

Sweden. At launch, the modem, which weighed less than three pounds, phoned home via the Globalstar Communications satellite constellation. Engineers are now analyzing the system's performance.

"This is really a breakthrough for us," said Dwayne Morgan, lead engineer on the Flight Modem. "The data looked even better than we hoped. What this means is that it may be possible to track and communicate with our launch vehicles on demand, at very low systems and mission operations costs."

PAO Digital Photo

The Flight Modem team of (left to right) Ron Streitch, CSC; Barton Bull, GN&C Systems Engineering Branch; Dwayne Morgan, Real-Time Software Engineering Branch; Mike Haugh, CSC; and Chuck Grant, CSC, examine a flight modem designed for aircraft use.

The "Flight Modem," being developed at the NASA Wallops Flight Facility allows a rocket or any other flight vehicle to communicate with ground controllers without the traditional and costly equipment typically associated with flight missions.

"Accessing space is costly, and it represents a major impediment for both government and industry exploration and research," said Jay Pittman, Advanced Range Technology Initiative (ARTI) engineer at Wallops.

"The flight modem and innovations like it could reduce or even eliminate some of the costs associated with ground-based tracking-systems operations and maintenance."

The Flight Modem, located aboard the rocket, basically acts like a cell phone and places a call, through orbiting satellites, to ground controllers.

The modem can relay the position of the rocket and may one day also provide information on the performance and health of the vehicle and its payload.

A prototype system, costing less than $2,500 and based on off-the-shelf components, was flown February 19 on an Orion suborbital rocket from Kiruna,

"Our goal in ARTI is to revolutionize the way we support tracking and commanding an in-flight expendable launch vehicle. The performance of the Flight Modem prototype system during the first flight test showed we are on the right track," Morgan said.

Pittman said, "When perfected, the Flight Modem could become a pervasive presence in aircraft and launch vehicle activities and the basis for development of applications that haven't even been thought of yet. We could imagine science or even commercial aircraft 'phoning in' data for analysis from anywhere in the world and from any kind of platform. The cost is so low and the concept so simple it is hard to predict where and how this technology will be used."

Additional information on the Flight Modem and the Advanced Range Technology Initiative can be found on the Internet at: http://www.wff.nasa.gov/~fltmodm/ and http://thinh.gsfc.nasa.gov/arti/arti4.htm

Student Experiments Fly High Thanks to NASA

A NASA education program will give high school students from across the country the opportunity for their dreams to literally take flight when experiments they have designed fly on either a Space Shuttle or sub-orbital rocket.

Lynn Marra, NSIP Officer at NASA Headquarters, said, "The flight opportunities portion of this program provides for high school students to take their experiments beyond the classroom and into space. In addition, students work with an experiment throughout its life span - from proposal, fabrication and flight through data analysis."

The winning entrees were:

Space Shuttle experiments
"Mechanical Resonators in Space"- Agoura High School, Agoura, Calif.

"Artemia Space Launch Experiment" - DuVal High School, Lanham, Md.

"Aeroponics: Food Cultivation in Space" - Glenbrook North High School, Northbrook, Ill."

Laminar Fluid Flow in Microgravity" - The Northwest School, Seattle, Wash.

Suborbital Rocket experiments
"Environment" - Glenbrook North High School
"The Effects of High G Forces on Electric Motors" - The Northwest School

"Testing for Global Warming and Ozone Depletion Through Space Flight Opportunities" - Laramie Senior High School, Laramie, Wyo.

"Sub-orbital Film Radiation Exposure Experiment" - Lafayette High School, Brooklyn, N.Y.

In addition to flying their experiments, the student teams and an advisor will journey to the NASA Wallops Flight Facility for one week in June. During the week, they will work with NASA engineers and technicians to make the final preparations for flight and see the operations at the country's oldest established launch range.

Rocket experiment students will take part in pre-launch reviews and, weather permitting, view their experiment lofted into space aboard an Orion suborbital rocket.

GSFC Annual and Quarterly Award Recipients

Congratulations to the following individuals and groups who received GSFC Annual Honor Awards as indiciated on March 6.

Outstanding Teamwork
Black History Club

Quality and Process Improvement
John Dickerson, Range and Mission Management Office

Customer Service Excellence
Wallops Print Shop

Spring/Summer 2000 Sounding Rocket Campaign Range Support Team

Institutional Support — Programmatic
Pam Taylor, Procurement Office

Institutional Cost Working Group

Get a head start on your garden

Uncover perennial and strawberry beds gradually, pressing into place plants that have been pulled up.

Check fences, latticework and trellises for damage and repair before new growth begins.

Dormant spraying for fruit trees should be done before spring growth begins.

Resist the urge to uncover tulips and daffodils. Loosen the mulch, but new shoots will still benefit from protection against cold and winds.

Now's the time to spread manure on the garden, especially on the asparagus bed.

Severally cut back hydrangea now to stimulate good blooms.

Now's the time to start seedlings and some vegetables in flats: good annual choices are larkspur, asters, and balsam. Good vegetable choices are: brussel sprouts, broccoli, cauliflower, peppers, cabbage, tomatoes and lettuce.

The earlier peas mature, the sweeter they'll be. Sow them now.

Feed fruit trees and lilacs when you clean out the fireplace by scattering the ashes around the base of trees and bushes.

The minerals and other nutrients in wood ashes will sink down to root systems. Any hard wood burned in a fireplace supplies numerous trace elements including calcium, zinc, copper and other minerals that fruit trees crave. Wood ashes also help to sweeten the soil around lilacs that bloom more lavishly in alkaline soil.

PAO Digital Photo

Wallops Fire Department personnel receive training on how to fight aircraft fires. The Commonwealth of Virginia Mobile Aircraft Rescue Fire Fighting Trainer was used to simulate various fire and rescue scenarios.

When Domestic Violence Comes to Work

March 28
Building F-3

10 - 11:30 a.m. for supervisors
1 - 2 p.m. for employees

Retirement Planning at Any Age

April 2 and 3, 2001
9 a.m. - 4 p.m.
Building E-2 Conference Room

The mid-career planning course is designed for CSRS/FERS Federal employees with 10-15 years of service.

In today's ever-changing financial environment, it is crucial to begin or at least consider planning for retirement.

This course will describe benefits available within the Federal Service and explore options to maximize them. All aspects of FERS, Trans-FERS, CSRS, CSRS-offset employee programs will be examined.

Experts in each of the topics shown below will be on hand to answer questions.

Topics Covered CSRS and FERS
Social Security Implications
TSP
Insurance Needs, Benefits and Options to Include FEGLI and FEHBP
Lifetime Fitness and Health
Financial Planning and Estate Planning

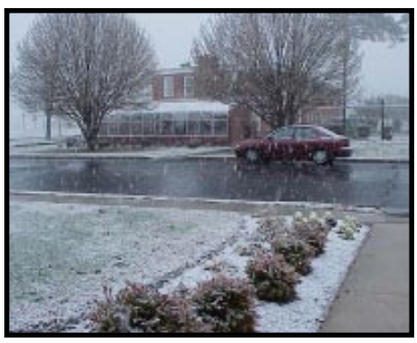
Send training requests through your supervisor for signature, your Directorate Training Coordinator, then to Kathy Dinsmore for registration. To ensure you get into the course, fax an advance copy of your training request to: x66-1679.

Wallops Shorts……

Science Fair

Bruce Scott, Range and Mission Management Office; Les Lynch, Reliable Systems Service; Andrew Groves, Orbital Science Corporation, and Rick Baldwin, Virginia Space Flight Authority, served as judges for the Berlin Intermediate School Science Fair held on March 20.

It is Spring!



Although spring officially arrived on March 20, snow fell again on March 26. Take heart, the first day of summer is June 21!

Daylight Saving Time Begins Sunday, April 1.

Don't forget to set your clock ahead one hour!

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http://www.wff.nasa.gov